

**REMARKS**

Favorable reconsideration of this application is respectfully requested in view of the foregoing amendments and the following remarks.

Claim 5 has been canceled without prejudice or disclaimer of the subject matter contained therein. Claims 12-17 are newly added. Claims 1-4, 6-9, 10 and 11 have been amended. Thus, claims 1-4 and 6-17 are pending in the present application, of which claims 1, 10 and 11 are independent.

**Noted – Information Disclosure Statements Considered**

The indication (see Examiner-initialed PTO form 1449 mailed with Office Action dated August 6, 2008) that the Information Disclosure Statements as filed on December 30, 2005 and December 11, 2007 and references listed therein have been considered is noted with appreciation.

**Noted - Drawings Approved**

The indication (see Office Action Summary, boxes 10(a) are checked) that the Drawings (submitted on December 30, 2005) have been approved is noted with appreciation.

**Double Patenting**

Claims 1, 2 and 3 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 6, 10, 14 and 15 of copending application No. 10/581,853. Claim 1 has been amended to incorporate features similar to those recited in canceled claim 5, thereby rendering the rejection to claim 1 moot. Claims 2 and 3 depend from claim 1, and so the rejection to claims 2 and 3 is also moot. Accordingly, withdrawal of the rejection is respectfully requested.

**Claim Rejection Under 35 U.S.C. §102**

Claims 1, 3, 5-6 and 10-11 are rejected under 35 U.S.C. §102(b) as being anticipated by Ooi et al. (U.S. Patent Application Publication No. 2002/0018266, hereinafter "Ooi").

As an example, independent claim 1 recites (among other things) the feature of "a polarimeter to measure a state of polarization and a degree of polarization of the output optical signal and generate a feedback signal indicating the measured state of polarization and degree of polarization." (Underlining is added for emphasis.) As will be explained below, at least this feature of claim 1 is a distinction over Ooi.

Ooi merely describes PMD compensation based on strength detection signals from PMD monitors without any discussion of a feedback signal indicating the measured state of polarization and degree of polarization. In particular, paragraph [0075] of Ooi states the following.

The control circuit 14 judges a PMD amount of the signal light output from the variable PMD compensation section 11 based on the respective strength detection signals output from the respective PMD monitors 13A and 13B, and feedback controls the polarization control section 10 and the variable PMD compensation section 11 so that a PMD compensation amount becomes an optimum.

Paragraph [0079] of Ooi cited in the Office Action also describes strength detection signals. However, Ooi fails to describe that the strength detection signals output from the respective PMD monitors 13A and 13B indicate both a measured state of polarization and a measured degree of polarization. Hence, the noted feature of claim 1, namely "a polarimeter to measure a state of polarization and a degree of polarization of the output optical signal and generate a feedback signal indicating the measured state of polarization and degree of polarization," is a distinction over Ooi. (Underlining is added for emphasis.)

Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim. In view

of the distinction of claim 1 noted above, at least one claimed element is not present in Ooi. Hence, Ooi does not anticipate claim 1.

As an example, independent claim 10 recites (among other things) a feature of “a distortion analyzer to measure a state of polarization and a distortion of the output optical signal and generate a feedback signal indicating the measured state of polarization and distortion.” (Underlining is added for emphasis.) Based on arguments similar to those explained above with respect to claim 1, this feature of claim 10 provides a distinction over Ooi. Hence, Ooi also does not anticipate claim 10.

As an example, independent claim 11 recites (among other things) “measuring a state of polarization and a distortion of the output optical signal to generate a feedback signal indicating the measured state of polarization and distortion.” (Underlining is added for emphasis.) Based on arguments similar to those explained above with respect to claim 1, this feature of claim 11 provides a distinction over Ooi. Hence, Ooi also does not anticipate claim 11.

Claims 3 and 6 depend from claim 1, and so at least similarly distinguish over Ooi. Hence, Ooi also does not anticipate claims 3 and 6. Claim 5 has been canceled.

In view of the foregoing discussion, the rejection of independent claims 1, 3, 5-6, 10 and 11 is improper. Accordingly, withdrawal of the rejection is respectfully requested.

### **Claim Rejection Under 35 U.S.C. §103**

Claim 2 is rejected under 35 U.S.C. §103(a) as being unpatentable over Ooi in view of Rao et al. (U.S. Patent Application Publication No. 2004/0016874, hereinafter “Rao”). Claim 2 depends from claim 1. A basis for how Ooi is deficient vis-à-vis claim 1 has been noted above. The Office Action does not rely upon Rao to compensate for the above-noted deficiencies of Ooi with respect to claim 1. Hence, claim 2 distinguishes over Ooi and Rao for at least the same reasons that claim 1 distinguishes over Ooi.

Among other things, a *prima facie* case of obviousness must establish that the asserted combination of references teaches or suggests each and every element of the claimed invention. In view of the distinction of claim 2 noted above, at least one claimed element is not present in the asserted combination of references. Hence, the Office Action fails to establish a *prima facie* case of obviousness vis-à-vis claim 2.

Claim 4 is rejected under 35 U.S.C. §103(a) as being unpatentable over Ooi in view of Taylor (U.S. Patent No. 7,107,979). Claim 4 depends from claim 1. A basis for how Ooi is deficient vis-à-vis claim 1 has been noted above. The Office Action does not rely upon Taylor to compensate for the above-noted deficiencies of Ooi with respect to claim 1. Hence, claim 4 distinguishes over Ooi and Taylor for at least the same reasons that claim 1 distinguishes over Ooi.

Among other things, a *prima facie* case of obviousness must establish that the asserted combination of references teaches or suggests each and every element of the claimed invention. In view of the distinction of claim 4 noted above, at least one claimed element is not present in the asserted combination of references. Hence, the Office Action fails to establish a *prima facie* case of obviousness vis-à-vis claim 4.

Claims 5-7 and 9 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ooi in view of Penninckx et al. (U.S. Patent No. 6,631,221, hereinafter "Penninckx").

Claim 5 has been canceled. However, independent claim 1 has been amended to incorporate features similar to those previously recited in canceled claim 5. Thus, how claim 1 distinguishes over Ooi and Penninckx is detailed below.

As an example, independent claim 1 recites (among other things) the following features:

- a polarimeter to measure a state of polarization and a degree of polarization of the output optical signal and generate a feedback signal indicating the measured state of polarization and degree of polarization; and

- a control circuit to generate, based on the feedback signal, control signals for adjusting the polarization transformer so that a plurality of target states of polarization in which the degree of polarization is measured are realized in output optical signals of

following operations and to search the plurality of target states of polarization for a state of polarization corresponding to a maximum degree of polarization.

As will be explained below, at least these features of claim 1 provide distinctions over Penninckx, and thus over its combination with Ooi.

Penninckx merely describes an algorithm in a feedback loop adapting its step according to a distance of an input state of polarization (SOP) from a rotation axis without any discussion of searching for a state with the maximum degree of polarization. In particular, column 4, lines 34-44 of Penninckx states the following.

The SOPs A, A', A" at the input lie in this case all on the equator line of the Poincare sphere. Each has a different distance to the rotation axis 23. When the birefringent element rotates the SOPs A, A', A" at the input by the angle  $\beta$  around the rotation axis 23, the SOPs B, B', B" result. If the distance of an SOP A, A', A" at the input to the rotation axis is large, the distance of the SOP B, B', B" at the output is also large. Thus, the algorithm in the feedback loop can adapt its step according to the distance of an input SOP A, A', A" from the rotation axis 23, i.e. a wider step when A, A', A" is close to the rotation axis and vice versa.

(Underlining is added for emphasis.) The above-cited Penninckx fails to disclose or suggest adjusting a transformer to provide a plurality of target SOPs for following operations, much less searching a plurality of SOPs for a SOP corresponding to a maximum degree of polarization. Rather, Penninckx merely indicates an SOP may be considered when adjusting a step associated with an algorithm of a feedback loop. Hence, amended claim 1 provides distinctions over claim 1 based at least on the above-noted features, namely

a control circuit to generate ... control signals for adjusting the polarization transformer so that a plurality of target states of polarization in which the degree of polarization is measured are realized in output optical signals of following operations and to search the plurality of target states of polarization for a state of polarization corresponding to a maximum degree of polarization.

Among other things, a *prima facie* case of obviousness must establish that the asserted combination of references teaches or suggests each and every element of the claimed invention. In view of the distinction of claim 1 noted above, at least one claimed element is not present in the asserted combination of references. Hence, the Office Action fails to establish a *prima facie* case of obviousness vis-à-vis claim 1, which includes features similar to those previously recited in canceled claim 5.

Claims 6, 7 and 9 ultimately depend from amended claim 1, and so at least similarly distinguish over the asserted combination of references.

Claim 8 is rejected under 35 U.S.C. §103(a) as being unpatentable over Ooi and Penninckx, further in view of Price (U.S. Patent Application Publication No. 2004/0208614). A basis for how a combination of Ooi and Penninckx is deficient vis-à-vis claim 1 has been noted above. The Office Action does not rely upon Price to compensate for these deficiencies. Hence, claim 8 distinguishes over Ooi, Penninckx and Price for at least the same reasons that amended claim 1 distinguishes over Ooi and Penninckx.

Among other things, a *prima facie* case of obviousness must establish that the asserted combination of references teaches or suggests each and every element of the claimed invention. In view of the distinctions of claim 8 noted above, at least one claimed element is not present in the asserted combination of references. Hence, the Office Action fails to establish a *prima facie* case of obviousness vis-à-vis claim 8.

In view of the foregoing discussion, the rejection of claims 2 and 4-9 is improper. Accordingly, withdrawal of the rejection is respectfully requested.

### **New Claims**

Again, new claims 12-17 have been added. Claims 12-17 ultimately depend from one of independent claims 1, 10 and 11 and thus, are allowable for at least the same reasons as the independent claim from which they depend.

**PATENT**

Atty Docket No.: 02-53398

App. Ser. No.: 10/595,031

**Conclusion**

In light of the foregoing, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should the Examiner believe that a telephone conference with the undersigned would assist in resolving any issues pertaining to the allowability of the above-identified application, please contact the undersigned at the telephone number listed below. Please grant any required extensions of time and charge any fees due in connection with this request to deposit account no. 50-4610.

Respectfully submitted,

Dated: November 6, 2008

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/Scott A. Elchert/  
Scott A. Elchert  
Registration No.: 55,149  
Phone: (202) 285-4177

FUJITSU AMERICA, INC.  
Fujitsu Patent Center  
PTO Customer No.: 79326